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10/677,377	10/03/2003	Makoto Sato	03560.003374.	9735

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EXAMINER

SMITH, JEFFREY S

ART UNIT	PAPER NUMBER
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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/677,377	Applicant(s) SATO, MAKOTO	
	Examiner Jeffrey S. Smith	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17, 20-22, 24, 27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-15, 17, 20-22, 24, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claims 13-15, 17, 20-22, 24 and 27-28 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

For example, claim 13 recites a method of deciding whether to display, changing the first and/or second image, and computing a difference image. Figures 2 and 8 show generating a difference image S200, selecting a display mode S500, and converting a gradient S600, which is the opposite of claim 13. In other words, the drawings show that the method generates the difference image, then selects a display mode, then converts the difference image. The claimed method of deciding, changing and computing in that order is missing from the drawings. Also, the step of changing a first or second image before the difference image is generated is missing from the drawings. The methods of claims 14-15 and 17 are also missing.

For claims 20-22, 24 which are expressed as means or steps plus function, please identify the specific elements shown in the drawings, along with the corresponding page and line numbers within the disclosure which describe the claimed structure and acts as shown in the drawings. For each claim element that is missing from the drawings, the element must be shown or the feature canceled from the claims.

For claims 27-28, which are for executable programs that perform the method of claim 13, the method steps are not shown, and also the computer readable storage medium and the code for performing the method steps are not shown.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the features of claims 13-15, 17, 20-22, 24 and 27-28 must be described in the detailed description.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-15, 17, 20-22, 24 and 27-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 "display a shadow change region of the difference image as a negative image or a positive image" conflicts with "changing the first image and/or the second image into the negative image or the positive image." Claims 14, 20-21 and 27-28 have similar problems.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-15, 17, 20-22, 24 and 27-28 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 6,215,848 issued to Linders et al. ("Linders") in view of U.S. Patent Number 5,999,652 issued to Bushman ("Bushman").

Claim 13, Linders discloses a decision step of deciding whether to display a shadow change region of the difference image as a negative image or a positive image (column 3 lines 35-37 the high and low values can be interchanged, the decision to interchange the high and low values is made by one of ordinary skill in the art as taught by Linders at line 36), and a computing step of computing a difference image from the first image and the second image (column 3 lines 18-22 individual difference images represent differences between corresponding brightness values of successive x-ray images).

Bushman discloses an image processing step of changing the first image and/or the second image into the negative image or the positive image (The differential picture image may be detailed either by a mathematical subtraction of pixel values or by making one frame a negative image and by adding the negative frame to a next positive image in the sequence of frames or vice versa).

It would have been obvious to one of ordinary skill at the time of invention to decide whether to display a shadow change region of the difference image as a positive image or a negative image because the negative image actually contains the same information as the corresponding positive image as taught by Linders at column 3 lines 35-39. It also would have been obvious to one of ordinary skill in the art to change the first image and/or the second image into the negative image or the positive image.

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based on the decision, then computing the difference image from the first image and the second image changed in the image processing step, because the differential image allows for the high detection of the presence of an object, while eliminating non-desireable interference such as noise as taught by Bushman at column 4 lines 36-45.

Claim 14, the image attributes acquisition step of acquiring image attributes of the first image and the second image is disclosed by the image sensor matrix of Linders that constitutes a suitable x-ray detector that picks up an x-ray image (column 2 lines 28-56).

Claim 15, the image processing step includes a gradient inversion step is disclosed by Linders (the high and low grey values are interchanged or inverted) and Bushman (making one frame a negative image).

Claim 17, the first image and the second image are images taken of the same portion of the human body at different points in time is disclosed by Linders (column 4 lines 8-32).

Claims 20-22 and 24, which recite an apparatus that performs the methods of claim 13, are rejected for the reasons given in claim 13-15 and 17.

Claims 27-28, which recite a computer program stored on a computer readable medium for performing the method of claim 13, is rejected for the reasons given in claim 13.

Response to Arguments

Applicant's arguments with respect to claims 13-15, 17, 20-22, 24 and 27-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Number 5,982,927 issued to Koljonen discloses a method of separating a difference image into a positive and negative difference image in column 9 lines 40-58.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
May 7, 2007


JINGGE WU
SUPERVISORY PATENT EXAMINER